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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/554,025	06/15/2000	CHRISTOPH DORR	TRW(EHR4846	6556
26294	7590	01/04/2006	EXAMINER	
TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P.			GARCIA, ERNESTO	
526 SUPERIOR AVENUE, SUITE 1111			ART UNIT	
CLEVEVLAND, OH 44114			PAPER NUMBER	

3679

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/554,025	Applicant(s) DORR, CHRISTOPH	
	Examiner Ernesto Garcia	Art Unit 3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 11, 13, 14, 16-18 and 22-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 24 is/are allowed.
- 6) ☒ Claim(s) 11, 14, 16-18, 22, 23 and 25-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The indicated allowability of claims 14, 16-18, 22, 23, and 25 is withdrawn in view of the newly discovered reference(s) to Maughan et al., 5,672,024, Flumerfelt, 2,495,959, and Flumerfelt, 2,556,033. Rejections based on the newly cited reference(s) follow.

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/03/2005 has been entered.

### ***Drawings***

The drawings were received on 09/06/05. These drawings are acceptable.

***Claim Rejections - 35 USC § 102***

Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Maughan et al., 5,672,024.

Regarding claim 22, Maughan et al. disclose, in Figure 5, a ball-and-socket joint comprising a joint pin **36**, a bearing shell **64**, a joint housing **62**, a metal ring **60** (col. **3**, lines **21-22**). The joint pin **36** has a joint ball **38**. The joint housing **62** has an opening **68**. The metal ring **6** has a cylindrical portion **92**. The cylindrical portion protrudes from the opening **68** of the housing **62** forms a passage receiving the bearing shell **64**. An inside diameter of the metal ring **60** comprises a guide surface. The metal ring also has a radially inwardly bent end segment **80**. The metal ring **60** further includes a radially outwardly extending flange portion **90**. The radially outwardly extending flange portion **90** extends into and being embedded in the joint housing **62**. The joint ball has an equator. The radially outwardly extending flange portion **90** of the metal ring **60** extends into the joint housing at a location near the equator of the joint ball **38**.

***Claim Rejections - 35 USC § 103***

Claims 11 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graham et al., 2,424,455, in view of Pazdirek et al., 5,609,433.

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Regarding claim 11, Graham et al. disclose, in Figure 1, a ball-and-socket joint having a joint pin **15**, a joint housing **10**, a bearing shell **13a**, and a metal ring **12**. The joint pin **15** is provided with a joint ball **15a**. The bearing shell **13a** is inserted into the housing **10**. The joint pin **15** extends through the open end portion **13d**. The ring **12** has a cylindrical center part **12a** having an inner surface **B1** and an outer surface **B2**. The housing **10** abuts against the outer surface **B2** of the cylindrical center part **12a**. The inner surface **B1** of the cylindrical center part **12a** has a diameter that corresponds to an outside diameter of the bearing shell **13a** and the inner surface of the cylindrical center part is in abutting engagement with the outside diameter of the bearing shell **13a**.

The ring **12** has a radially outwardly angled flange **12b** having an upper surface and a lower surface both surrounded by material of the housing **10**. The ring **12** has a radially inwardly bent end segment **12d** located in an area **A15** of an opening **A5** in the housing **10**. The radially inwardly bent end segment **12d** secures the bearing shell **13a** within the housing **10**. Applicant is reminded that the bearing shell **13a** is for a rotatable-and-tiltable support of the joint ball **15a**. The ring **12** is for positively locking the bearing shell **13a** within the housing **10**. The area **A15** of the opening **A5** is provided for passage of the joint pin **15**.

However, Graham et al. fails to disclose the housing **10** being made of plastic. Pazdirek et al. teach, in Figure 2, a ball-and-socket joint having a joint housing **12** made of plastic, thus a plastic joint housing. The housing is made of plastic to make a ball

joint by making the housing molded around the bearing shell and the joint pin, and to make the joint lightweight (col. 4, lines 44-46). Therefore, as taught by Pazdirek et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the housing from plastic to make the joint lightweight.

Regarding claim 26, as modified above, the ring **12** protrudes outwardly of the housing **10** such that the radially inwardly bent end segment **12d** is spaced away from the housing **10** in the area **A15** of the opening **A5** of the housing **10**. The open end portion **13d** of the bearing shell **13a** also protruding outwardly of the housing **10** and being secured relative to the housing **10** by the radially inwardly bent end segment **12d**.

Regarding claim 27, Graham et al. discloses, in Figure 1, a ball-and-socket joint comprising a joint pin **15**, a joint housing **10**, a bearing shell **13a** and a metal ring **12**. The joint pin **15** is provided with a joint ball **15a**. The bearing shell **13a** is inserted into the housing **10**. The ring **12** has a radially outwardly angled flange **12b** embedded in the housing **10**. The ring **12** has a radially inwardly bent end segment **12d** located in an area **A15** of an opening **A5** in the housing **10**. The radially inwardly bent end segment **12d** secures a position of bearing shell **13a** within the housing **10**. An inside diameter **A32** of a cylindrical center part **12a** of a ring **12** corresponds to an outside diameter **A33** of the bearing shell **13a**. The cylindrical center part **12a** of the ring **12** has an inner surface **B1** and an outer surface **B2**. Material of the housing **10** engages only the outer

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surface of the cylindrical center part **12a**. The inner surface **B1** of the cylindrical center part **12a** is free of material from the housing **10**.

However, the joint housing **10** is not made of plastic material. Pazdirek et al. teach, in Figure 2, a ball-and-socket joint having a joint housing **12** made of plastic, thus a plastic joint housing to make a ball joint by making the housing insert molded around the bearing shell and the joint pin, and to make the joint light weight (col. 4, lines 44-46). Therefore, as taught by Pazdirek et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the housing from plastic to make the ball joint light weight.

Applicant is reminded that the bearing shell **13a** is for a rotatable-and-tiltable support of the joint ball **15a**. The ring **12** is for positively locking the bearing shell **13a** within the housing **10**. The area **A15** of the opening **A5** is provided for passage of the joint pin **15**.

Regarding claim 28, the bearing shell abuts against the inner surface **B1** of the cylindrical center part **12a** of the ring **12**. The cylindrical center part **12a** of the ring **12** is interposed between the bearing shell **13a** and the joint housing **10**.

Claim 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maughan et al., 5,672,024, in view of Pazdirek et al., 5,609,433.

Regarding claim 14, Maughan et al. disclose a ball-and-socket joint comprising a joint pin **36**, a joint housing **62**, and a metal ring **60** (col. 3, lines 21-22). The joint pin **36** is provided with a joint ball **38**. The joint housing **62** into which is inserted a bearing shell **64**. The bearing shell **64** is a one-piece member having an open end portion **106** through which the joint pin **36** extends and a support portion **107** that contacts and supports the joint ball **38**. The metal ring **60** has a radially outwardly angled flange **90** embedded in the joint housing **62**. The metal ring **60** has a radially inwardly bent end segment **80** located in an area of an opening **68** in the joint housing **62**. The radially inwardly bent end segment **80** abuts the open end portion **106** of the bearing shell **64** and secures the bearing shell **64** within the joint housing **62**. An inside diameter of a cylindrical center part **92** of the metal ring **60** corresponds to an outside diameter of the bearing shell **64**. The cylindrical center part **92** of the metal ring **60** is interposed between and connects the radially inwardly bent end segment **80** and the radially outwardly angled flange **90**. The radially outwardly angled flange **90** is located in an area of an equator of the joint ball **38**. However, the joint housing **62** is not made of plastic to render a plastic joint housing.



Pazdirek et al. teach, in Figure 2, a ball-and-socket joint having a joint housing **12** made of plastic, thus a plastic joint housing. The housing is made of plastic to make a ball joint by making the housing molded around the bearing shell and the joint pin, and to make the joint lightweight (col. 4, lines 44-46). Therefore, as taught by Pazdirek et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the housing from plastic to make the joint lightweight.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Flumerfelt, 2,495,959, in view of Flumerfelt, 2,556,033, Pazdirek et al., 5,609,433, and Kindel, 3,530,495.

Regarding claim 18, Flumerfelt '959 discloses, in Figure 1, a ball-and-socket joint having a joint pin **18**, a joint housing **8**, a bearing shell **30**, and a metal ring **10**. The joint pin **18** is provided with a joint ball **20**. The bearing shell is a one-piece member (col. 2, lines 25-31; see Flumerfelt '033) having an open end portion through which the joint pin **18** extends through. The bearing shell has a support portion that contacts and supports the joint ball **20**. The ring **10** has a radially outwardly angled flange **16** embedded in the joint housing **8**. The ring **10** has a radially inwardly bent end segment **12** located in an area of an opening in the joint housing **8**. The radially inwardly bent end segment **12** abuts the open end portion of the bearing shell **30** (Fig. 1) and secured the bearing shell **30** within the housing **8**. An inside diameter of a cylindrical center part of the metal ring

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corresponds to an outside diameter of the bearing shell **30**. However, Flumerfelt fails to disclose joint housing **8** being made of plastic and the joint housing provided with a ring groove in an area of the opening.

Pazdirek et al. teach, in Figure 2, a ball-and-socket joint having a joint housing **10** made of plastic, thus a plastic joint housing. The housing is made of plastic to make a ball joint by making the housing molded around the bearing shell and the joint pin, and to make the joint light weight (col. 4, lines 44-46). Therefore, as taught by Pazdirek et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the housing from plastic to make the joint light weight.

Kindel teaches, in Figure 1, a joint housing provided with a ring groove in an area of an opening of the housing to allow mounting a sealing bellows with a ring which will prevent debris from entering the housing. Therefore, as taught by Kindel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a ring groove in an area of the opening of the housing to mount a sealing bellows with a ring to prevent debris from entering the housing.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Flumerfelt, 2,495,959, in view of Kindel, 3,530,495.

Regarding claim 23, Flumerfelt '959 discloses, in Figure 1, a ball-and-socket joint having a joint pin **18**, a joint housing **8**, a bearing shell **30**, and a metal ring **10**. The joint housing **8** has an opening **6**. The joint pin **18** has a joint ball **20**. The metal ring **10** has a cylindrical portion (see Figure 3) protruding from the opening **6** of the housing **8** and the cylindrical portion forms a passage **11** receiving the bearing shell **30**. An inside diameter of the metal ring **10** comprises a guide surface (see Fig. 1). The metal ring **10** also has a radially inwardly bent end segment **12**. However, Flumerfelt fails to disclose a sealing bellows and the housing **8** including a ring groove located radially outwardly of the cylindrical portion of the metal ring **10**.

Kindel teaches, in Figure 1, a ball-and-socket joint comprising a sealing bellows **5** to protect the ball-and-socket joint from debris. Further, Kindel teaches a joint housing **1** provided with a ring groove to allow mounting the sealing bellows with a resilient ring member. Therefore, as taught by Kindel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a sealing bellows to protect the ball-and-socket joint of Flumerfelt, and to include a ring groove in the housing to mount the sealing bellows with the resilient ring member. Further, placing the ring groove in Flumerfelt in the same location provided by Kindel places the ring groove located radially outwardly of the cylindrical portion of the metal ring **10** in Flumerfelt.

Claims 16, 17, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flumerfelt, 2,495,959, in view of Henkel, 5,782,574, and Kindel, 3,530,495.

Regarding claim 25, Flumerfelt '959 discloses, in Figure 1, a ball-and-socket joint having joint pin **18**, a joint housing **8**, a bearing shell **30**, and a metal ring **10**. The joint pin is provided with a joint ball **20**. The bearing shell **30** is inserted in the housing **8**. The metal ring **10** is embedded in the joint housing **8** and has a radially inwardly bent end segment **12** located in an area of an opening in the joint housing **8**. An inside diameter of the metal ring **10** corresponds to an outside diameter of the bearing shell **30**. The bearing shell **30** includes a pin-side area. However, Flumerfelt fails to disclose the joint housing made of plastic and the pin-side area of the bearing shell provided with slits which extend up to an area of an equator of the joint ball **20**.

Henkel teaches, in Figure 1, a joint housing **40** made of plastic material (see cross hatching). However, Henkel fails to explicitly disclose the reason for make the housing of plastic material. It appears that making the housing of plastic material is cost effective and reduces weight. Therefore, as taught by Henkel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the housing of plastic material to reduce manufacturing cost and weight.

Kindel teaches, in Figure 2, a pin-side area of a bearing shell 4 provided with slits which extend up to an area of an equator of a joint ball 2a to facilitate installation and loading of the bearing shell within the housing (col. 2, lines 11-15). Therefore, as taught by Kindel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide slits which extend up to an area of the equator of the joint ball to ease installation and loading of the bearing shell with the housing.

Regarding claim 16, Flumerfelt '959 further discloses the bearing shell **30** also includes a head-side area facing away from the joint pin **18**. However, the head side area is not provided with indentations extending parallel to a joint axis. Kindel teaches, in a head-side area facing away from a joint pin provided with slits **8a** which extend up to an area of an equator of a joint ball **2a** to facilitate installation and loading of the bearing shell within the housing (col. 2, lines 11-15). Therefore, as taught by Kindel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide indentation which extend up to an area of the equator of the joint ball to ease installation and loading of the bearing shell with the housing.

Regarding claim 17, given the modification, the slits **8b** and the indentations **8a** will be formed in the bearing shell so as to be mutually offset in circumferential direction.

***Allowable Subject Matter***

Claims 13 and 24 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

regarding claim 24, the prior art of record does not disclose or suggest a ball-and-socket joint comprising a metal ring having a radially outwardly angled flange that is extrusion-coated with material of a joint housing (line 14), plastic (lines 2-3); the closest prior art, Graham et al., 2,424,455, and Maughan et al., 5,672,024, does not include this feature and there is no suggestion to provide this modification because no coating occurs and is not required for any expectation of success; and,

regarding claim 13, this claim depends from claim 24.

***Response to Arguments***

Applicant's arguments filed 10/3/05 have been fully considered but they are not persuasive.

Applicant has argued that making the housing of plastic does not have the ductility of metal and therefore could not be crimped to secure the joint of Graham et al. together; and that such modification would render the joint unsatisfactory for assembling

and securing. In response, it is noted that metal is used for crimping; however, why would one of ordinary skill in the art have to still continue to “crimp”? It appears that using plastic, results reasonable expectation of easy of assembling, as one does not have to crimp. Further, the requirement that the joint of Graham et al. could not be assembled and secured when modified with plastic is not a basic requirement in accordance with 35 USC 103 since “intended purpose” pertains to where the joint would be used, not how the joint is assembled.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30-5:30. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*E.G.*

E.G.

December 26, 2005

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